ASOS MAINTENANCE NOTE 31 (for Electronics Technicians)
Engineering Division
W/OSO321:AJW

Visibility Sensor Transmitter Optical Detector Functional Check

GENERAL

The visibility sensor transmitter optical detector functional check is accomplished by placing the Belfort field portable light source on the transmitter head and verifying current output of the sensor using a digital multimeter (DMM). This maintenance note provides directions and instructions for test equipment use and establishes the proper current limits of the optical detector in the transmitter canister. Refer to the following instructions to accomplish the maintenance.

PROCEDURE

NOTE: Before completing this procedure, notify the AOMC, OIC/MIC and any other users.

Tools Required: Large flat-tipped screwdriver
Digital multimeter accurate to ±A (microamperes)
Belfort Field Portable Light Source Calibration Unit S100-TE303-2

WARNING

Death or severe injury may result if power is not removed from sensor prior to performing maintenance activities.

1. At the DCP cabinet, set the visibility sensor circuit breaker module to OFF (right) position.

2. Lower the visibility sensor to a horizontal position by removing hinge pin and pivoting the sensor on its mounting hinge.

3. Using the large flat-tipped screwdriver, open the visibility sensor electronics enclosure (Appendix A-1) access door.

4. Remove the protective plug from the end of the Belfort Field Portable Light Source S100-TE305-2. Slide the light source into the visibility sensor TRANSMITTER hood, making sure that the light source is securely against the transmitter window. Orient the light source such that the potentiometer is facing up, and the banana plugs are accessible to the side. Secure the light source by snapping the bungee cord over the perch on the exterior of the TRANSMITTER hood.

5. Remove the cap from the back of the TRANSMITTER hood. Disconnect the DB-9 connector from the rear of the transmitter canister. Remove the trigger coaxial cable from the rear of the transmitter canister (Appendix A-3). Attach the coaxial cable from the light source to the coaxial connector on the rear of the transmitter canister.

6. At the visibility sensor electronics enclosure, locate the +24.0 VDC capacitor, which is the blue capacitor found in the upper right-hand corner of the electronics enclosure. Note that it is the smaller of the two large capacitors (Appendix A-2, C2). Using the long wire set attached to the light source, attach the wire with the RED alligator clip cover to the positive (+) terminal on the blue +24 VDC capacitor. Attach the alligator clip with the BLACK cover to the minus (-) terminal of the same capacitor.

7. Attach a digital multimeter to the banana plugs on the light source. Set the meter to an appropriate scale to measure a maximum of 50 microamperes DC. The digital multimeter test leads connecting to the light source should be as short as practical.

8. Reapply AC power to the visibility sensor by turning the visibility sensor circuit breaker in the DCP to the ON (left) position.

9. At the Field Portable Light Source unit, depress and hold the push button switch farthest away from the potentiometer adjusting knob. Observe that the digital multimeter shows current flow. Adjust the potentiometer until the current displayed by the multimeter matches the calibration current recorded on the label attached to the light source, ± 5 percent.

   NOTE: Because of the small amount of current being measured, the reading may be influenced by RF energy at the site and therefore it may not be possible to obtain a stable reading. If the reading will not remain within the 5 percent tolerance, it may be necessary to shorten the test leads. If RF energy prevents a good measurement, replace the transmitter canister with a tested spare canister.

10. With the first switch depressed, depress and hold the second switch (nearest to the potentiometer). Record the current measured on the multimeter. If the current measured is greater than 7.0 microamperes, the transmitter canister must be replaced.

    Canister replacement instructions are in Table 6.5.8 “Transmitter Assembly Removal and Installation” in the Site Technical Manual.

11. Remove AC power from the visibility sensor by turning the visibility sensor circuit breaker in the DCP to the OFF (right) position.

12. Remove the light source and associated cables. Reconnect the DB-9 connector to the rear of the transmitter canister. Reattach the trigger coaxial cable to the rear of the transmitter canister.

13. Install transmitter assembly cap and latch both fasteners.

14. Using the large flat-tipped screwdriver, close the visibility sensor electronics enclosure access door and secure.

15. Raise the visibility sensor and install hinge pin.

16. At the DCP, turn the visibility sensor circuit breaker to the ON (left) position.

AFFECT ON OTHER INSTRUCTIONS

None.

REPORT MAINTENANCE ACTION

Make the appropriate SYSLOG entries. Complete an Engineering Reporting System (EMRS) Form A-26 using instructions in Engineering Handbook No. 4.

Signed January 17, 1997
John McNulty
Chief, Engineering Division

Appendix 'A'

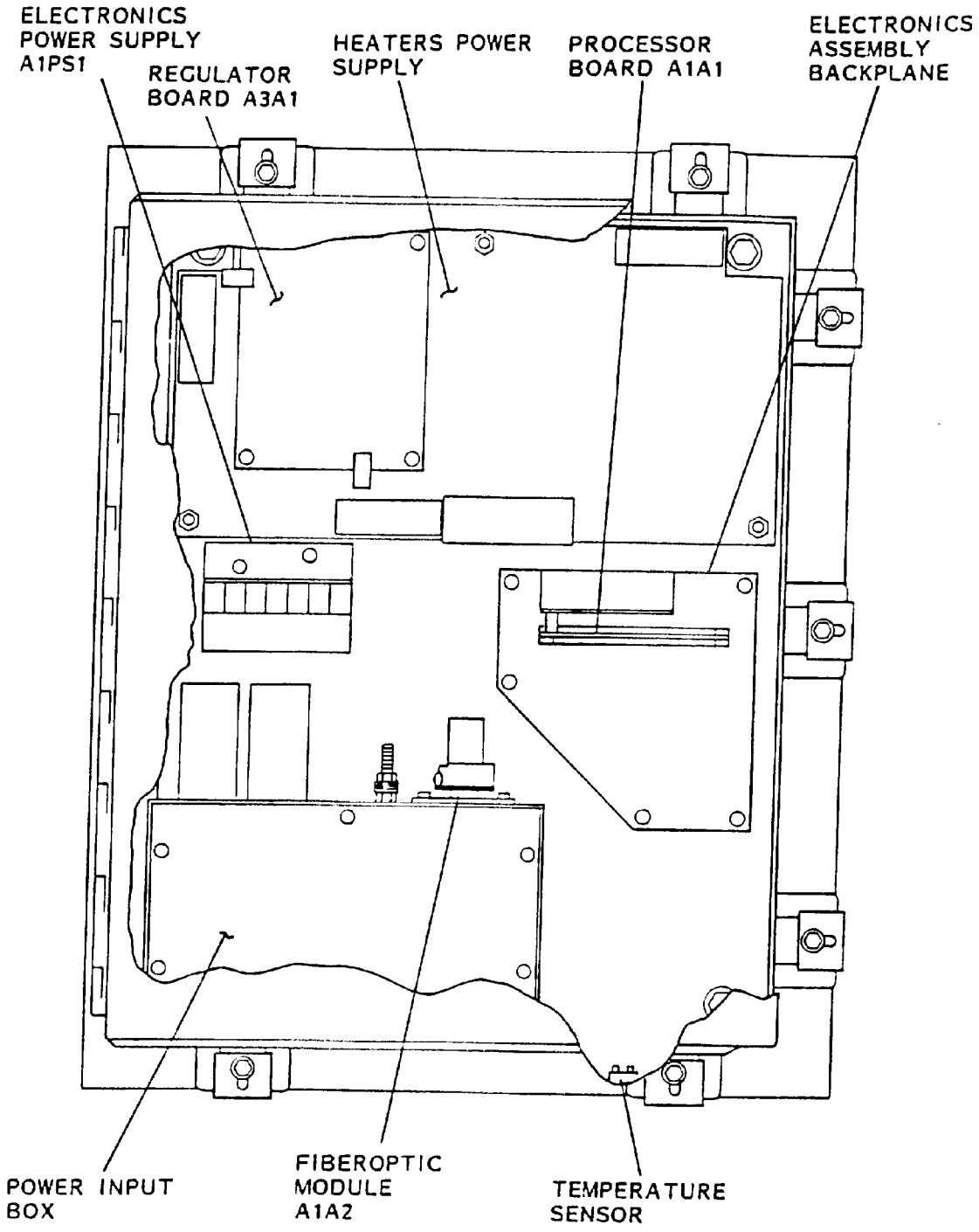
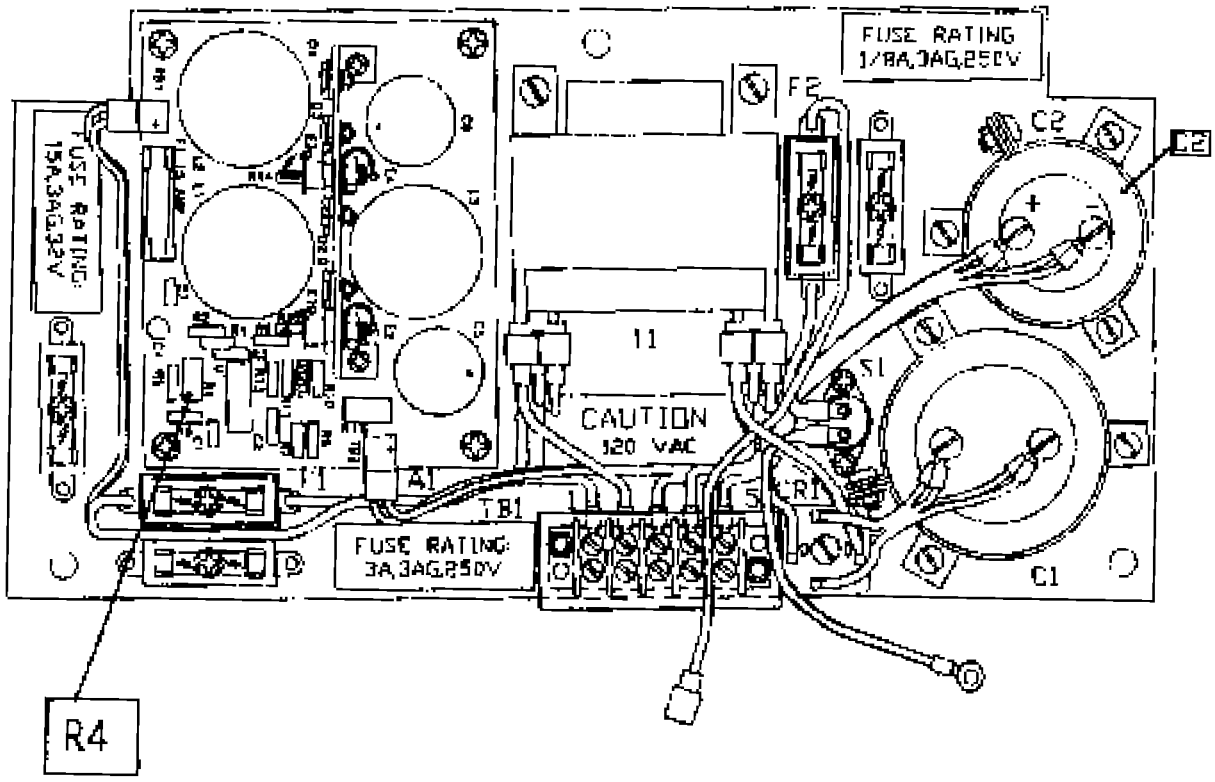
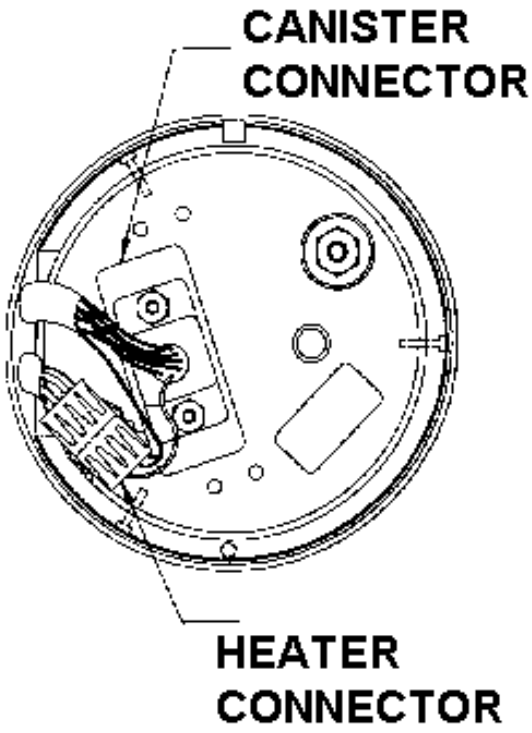


Figure 1 Visibility Sensor Electronics Enclosure



Heater Power Supply Board
Figure 2



TRANSMITTER CANISTER END VIEW

Figure 3